

Notice of Allowability

Application No.

10/674,370

Applicant(s)

YAO ET AL

Examiner

Lex Malsawma

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment filed on September 06, 2005.
2. ☒ The allowed claim(s) is/are 10-21 and 23-39.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413), Paper No./Mail Date _____. |
| 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date <u>11/14/05</u> | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material | 8. <input type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Aaron Peters (Reg. No. 48,801) on November 11, 15 and 17.

2. The application has been amended as follows:

Please replace ALL previous versions of the claims with the list of claims beginning on page 4 of this examiner's amendment.

3. The following is an examiner's statement of reasons for allowance:

Claims 10-21 and 23-39 are allowed primarily because independent claims 10, 14, 15 and 16 require a first metal pattern on the first surface; a second metal pattern electrically isolated from a third metal pattern on the second surface, wherein the second and third metal patterns are each selectively plated with a metal wherein the third metal pattern is plated with a type of metal different from the type of metal that is plated on the second metal pattern.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Remarks

4. In the telephone conferences with attorney Aaron Peters conducted on November 11, 15 and 17, 2005, agreement was reached with respect to all pending claims. The final list of claims was received from Attorney Peters via an e-mail attachment and the contents of the e-mail attachment have been copied and pasted below as part of this examiner's amendment.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lex Malsawma whose telephone number is 571-272-1903. The examiner can normally be reached on Mon. - Thur. (4-12 hours between 5:30AM and 10 PM).

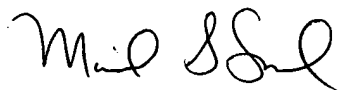
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith can be reached on 571-272-1907. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lex Malsawma



November 17, 2005



MATTHEW SMITH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

Claims 1-9 (Cancelled)

Claim 10 (Previously presented): A circuit package comprising:

a base portion having a first surface, a second surface, a first via, a second via, and a plurality of pins;

a first metal pattern disposed on the first surface;

a second metal pattern electrolytically and selectively plated with a metal of a first type disposed on the second surface, the second metal pattern being electrically coupled to the first via; and

a third metal pattern electrolytically and selectively plated with a metal of a second type different from the first type disposed on the second surface and arranged to form a gap to electrically isolate the second metal pattern from the third metal pattern, the third metal pattern being electrically coupled to the first metal pattern through the second via.

Claim 11 (Original): The circuit package of claim 10, wherein the base portion comprises a substrate.

Claim 12 (Original): The circuit package of claim 10, wherein the base portion comprises a ceramic substrate.

Claim 13 (Original): The circuit package of claim 10, wherein the base portion comprises one of an alumina substrate and an aluminum nitride (AlN) substrate.

Claim 14 (Currently amended): A circuit package comprising:

a base portion having a first surface, a second surface, a first via, a second via, and a plurality of pins;

a first metal pattern disposed on the first surface;

a second metal pattern disposed on the second surface, the second metal pattern being electrically coupled to the first via;

a nickel-plated pattern electrolytically and selectively disposed on the second metal pattern;[[and]]

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a third metal pattern disposed on the second surface and arranged to form a gap to electrically isolate the second metal pattern from the third metal pattern, the third metal pattern being electrically coupled to the first metal pattern through the second via; and

a plated pattern having a metal different from the nickel-plated pattern electrolytically and selectively disposed on the third metal pattern.

Claim 15 (Currently amended): A circuit package comprising:

a base portion having a first surface, a second surface, a first via, a second via, and a plurality of pins;

a first metal pattern disposed on the first surface;

a second metal pattern disposed on the second surface, the second metal pattern being electrically coupled to the first via;

a third metal pattern disposed on the second surface and arranged to form a gap to electrically isolate the second metal pattern from the third metal pattern, the third metal pattern being electrically coupled to the first metal pattern through the second via;[[and]]

a gold-plated pattern electrolytically and selectively disposed on the third metal pattern; and

a plated pattern having a metal different from the gold-plated pattern electrolytically and selectively disposed on the second metal pattern.

Claim 16 (Currently amended): A circuit package comprising:

a base portion having a first surface, a second surface, a first via, a second via, and a plurality of pins;

a first metal pattern disposed on the first surface;

a second metal pattern electrolytically and selectively plated with a first metal, the second metal pattern disposed on the second surface, the second metal pattern being electrically coupled to the first via;

a third metal pattern electrolytically and selectively plated with a second metal different from the first metal, the third metal pattern disposed on the second surface and arranged to form

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a gap to electrically isolate the second metal pattern from the third metal pattern, the third metal pattern being electrically coupled to the first metal pattern through the second via; and

a single unitary heat sink arranged to dissipate heat from a device built on the circuit package,

wherein the base portion comprises an opening arranged to engage the heat sink, and

wherein the third metal pattern comprises an opening arranged to expose the device to the heat sink.

Claim 17 (Original): The circuit package of claim 16,

wherein the base portion opening comprises a first perimeter edge, and

wherein the heat sink comprises:

a body having the same size and same shape as the base portion opening, and

a flange extending outwardly from the body having a second perimeter edge larger than the first perimeter edge.

Claim 18 (Original): The circuit package of claim 16, wherein the heat sink is engaged with the base portion via a braze alloy, the braze alloy providing a hermetic seal between the opening and the heat sink.

Claim 19 (Original): The circuit package of claim 18, wherein the braze alloy comprises a copper silver braze alloy.

Claim 20 (Original): The circuit package of claim 16, wherein the heat sink comprises a copper tungsten alloy heat sink.

Claim 21 (Original): The circuit package of claim 16,

wherein the heat sink comprises an upper surface and a lower surface having more surface area than the upper surface, and

wherein the upper surface is exposed on the second base portion surface and the lower surface is exposed on the first base portion surface when the heat sink is engaged with the base portion.

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Claim 22 (Cancelled).

Claim 23 (Currently amended): ~~The [[A]]circuit package of claim 11 comprising: wherein the [[a]]substrate comprises having a plurality of pins, a top surface, a bottom surface, a first via, a second via and an opening, wherein the first surface comprises a top surface and wherein the second surface comprises a bottom surface; the circuit package further comprising~~

~~a first metal pattern disposed on the top surface and electrically coupled to the first via; a second metal pattern disposed on the bottom surface and electrically coupled to the second via, the second metal pattern being electrically isolated from the first metal pattern; and a single unitary heat sink having a top surface and a bottom surface, the heat sink positioned within the opening such that the top surface is exposed through the top surface of the substrate and the bottom surface is exposed through the bottom surface of the substrate.~~

Claim 24 (Currently amended): The circuit package of claim 10 ~~[[23]]~~ further comprising:

~~a first plated pattern comprising the metal of the second type electrolytically and selectively disposed on the first metal pattern; and a second plated pattern electrolytically disposed on the second metal pattern.~~

Claim 25 (Currently amended): The circuit package of claim 24, wherein the ~~first~~ plated pattern comprises a gold plated pattern.

Claim 26 (Currently amended): The circuit package of claim 24, wherein the ~~second~~ plated pattern comprises a nickel plated pattern.

Claim 27 (Currently amended): ~~[[A]]The circuit package of claim 23 comprising: wherein the opening comprises a substrate having a plurality of pins, a top surface, a bottom surface, a first via, a second via and an opening comprising a first perimeter edge; and~~

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~~wherein the [[a]]single unitary heat sink comprises having a top surface, a bottom surface, a body having the same size and same shape as the opening, and a flange extending outwardly from the body having a second perimeter edge larger than the first perimeter edge; wherein the heat sink is positioned within the opening such that the top surface is exposed through the top surface of the substrate and the bottom surface is exposed through the bottom surface of the substrate.~~

Claim 28 (Currently amended): ~~[[A]]The circuit package of claim 23 comprising:~~
~~a substrate having a plurality of pins, a top surface, a bottom surface, a first via, a second via and an opening; and~~
~~a single unitary heat sink having a top surface and a bottom surface, the heat sink positioned within the opening such that the top surface is exposed through the top surface of the substrate and the bottom surface is exposed through the bottom surface of the substrate, wherein the heat sink is engaged with the substrate via a braze alloy, the braze alloy providing a hermetic seal between the opening and the heat sink.~~

Claim 29 (Original): The circuit package of claim 28, wherein the braze alloy comprises a copper silver braze alloy.

Claim 30 (Currently amended): The circuit package of claim 23[[22]], wherein the heat sink comprises a copper tungsten alloy heat sink.

Claim 31 (Previously Presented): The circuit package of claim 10, wherein the first metal type comprises nickel.

Claim 32 (Previously Presented): The circuit package of claim 10, wherein the second metal type comprises gold.

Claim 33 (New): The circuit package of claim 10, wherein at least one of the metal of the first type and the metal of the second type comprises a composite.

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Claim 34 (Currently amended): The circuit package of claim 23[[22]], wherein the single unitary heat sink comprises an upper body portion engaging the opening of the substrate and a lower body portion opposite the upper body portion.

Claim 35 (Currently amended): The circuit package of claim 23[[22]], wherein the top surface of the single heat sink comprises a surface area sufficient to effectively dissipate heat.

Claim 36 (Currently amended): The circuit package of claim 23[[22]], wherein the bottom surface of the single heat sink comprises a surface area sufficient to effectively dissipate heat through the heat sink.

Claim 37 (Currently amended): The circuit package of claim 23[[22]], wherein the bottom surface of the single heat sink comprises a surface area larger than the opening and wherein the single heat sink comprises a lower body portion forming a flange for engaging the heat sink in the opening.

Claim 38 (Currently amended): The circuit package of claim 23[[22]], wherein the bottom surface of the single heat sink is coplanar with the bottom surface of the substrate.

Claim 39 (Currently amended): The circuit package of claim 23[[22]], wherein the top surface of the single heat sink is coplanar with the top surface of the substrate.